L 17066-66

ACC NR: AT6001396

2

fairly random but strong increase in brightness was observed at the instant of maximum radiation in the region of the positive electrode in the case of the spark discharge taking place in helium and nitrogen. The authors express their deep appreciation to S. I. Levikov, who prepared the hydrogen and deuterium arc lamps, and to M. N. Smolkin, who calibrated them. Orig. art. has: 4 figures, 1 table.

SUB CODE: 20, 07 SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 000

Card 2/2

L 15279-66 EWT(l)/EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AT6001399 SOURCE CODE: UR/3180/64/009/000/0151/0152

AUTHOR: Vanyukov, M. P. (Candidate of physico-mathematical sciences); Galaktionova, N. A.; Yegorova, V. F.; Mak, A. A.

ORG: none

52
51
B71

TITLE: Radiation from spark discharges in gas mixtures

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 151-152

TOPIC TAGS: gas discharge plasma, gas discharge, xenon, helium

ABSTRACT: Earlier studies of the brightness of spark discharges showed that while in the case of light gases such discharges produce high temperature channels but achieve the limiting brightness only with strong discharges and at high pressures, heavy inert gases exhibit low limiting brightness, but this limit can be reached under soft discharge conditions and at low pressures. In the present note the authors investigate experimentally and theoretically a mixture of a light (basic) and heavy (admixture) gas which would allow the formation of very bright channels under soft discharge conditions and low pressures. Calculations of the ratio of energy losses due to the admixture to those of the basic gas and of the ratio of the respective coefficients of absorption showed that the most promising seem to be mixtures of gases of very different atomic weights (e.g., He + Xe). Experimental results are summarized in Fig. 1.

Card 1/3

L 15279-66
ACC NR: AT6001399

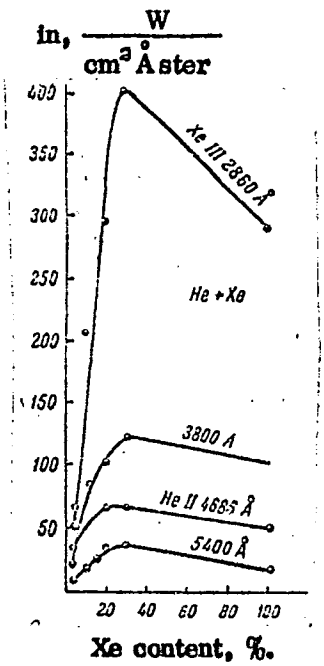

Fig. 1. Spectral brightness density as a function of Xe admixture in helium base gas

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L 15279-66
ACC NR: AT6001399

The brightness increase found in He + Xe mixtures did not materialize in tests using He + Ar mixtures. Orig. art. has: 2 figures.

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 003

Card 3/3

ACCESSION NR: AP4011499 S/0051/64/016/001/0153/0155

AUTHOR: Galaktionova, N.M.; Mak, A.A.

TITLE: Spectral-time characteristics of the radiation of tubular xenon flash tubes

SOURCE: Optika i spektroskopiya, v. 16, no.1, 1964, 153-155

TOPIC TAGS: flash tube, xenon tube, laser, laser source, discharge tube, xenon spectrum, flash tube efficiency

ABSTRACT: In view of the importance of xenon filled flash tubes in laser research and operation, tubes of this type have been investigated to determine the emission spectrum and energy output as a function of the tube parameters and the discharge conditions. The test procedure, which entailed the use of a DMR-4 monochromator and a photoelectric recording attachment, has been described earlier (M.P. Vanyukov, A.A.Mak,and N. V.Parazinskaya, Opt.i spektr.,1956). The set-up was calibrated with reference to a ribbon filament lamp. Values of the peak spectral density and brightness temperature for different λ for tubes 3 mm in diameter and 40 mm long (1) and 7.5 mm in diameter and 60 mm long (2) are tabulated (discharge conditions: V = 1000 v, C = 300 μf, L = 0); another table gives the energy yields

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ACC. NR: AP4011499

in percent for different wavelength intervals for tubes of type (1). Spectral distribution and intensity versus voltage curves are given in figures. The experimental results indicate that under the discharge conditions employed the spectral luminous density does not depend on the dimensions of the tube and corresponds to the radiation from an absolute black body at 17000°-1800°K except in the ultraviolet, where the brightness temperature is somewhat lower, and in the regions of some Xe lines where the temperature is about 2000°K. Orig. art. has: 2 tables and 3 figures.

ASSOCIATION: none

SUBMITTED: 04Apr63	DATE ACQ: 04Apr63	ENCL: 00
SUB CODE: PH	NR SOV REF: 004	OTHER: 000

Card 2/2

ACCESSION NR: AP4035484 S/0051/64/016/005/0911/0914

AUTHOR: Anan'yev, Yu. A.; Galaktionova, N. M.; Mak, A. A.; Sedov, B. M.

TITLE: The emission spectrum of a samarium 2+ doped calcium fluoride laser

SOURCE: Optika i spektroskopiya, v. 16, no. 5, 1964, 911-914

TOPIC TAGS: emission spectrum, calcium fluoride laser, samarium 2+ doped laser, laser oscillation spectrum, laser crystal

ABSTRACT: The experimental investigation of the emission spectrum of a samarium 2+ doped fluoride laser (emitting at 0.708 μ) was performed to establish the relationship between the temperature of crystal and the broadening of the oscillation spectrum. This confirms that while at small pumping energies the number of modes is independent of the energy, it sharply increases at larger energies, reaching

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ACCESSION NR: AP4035484

16 when the crystal is heated to 60K. Theoretical and experimental results indicate that the heating, due to Stokes losses, of a crystal 33 mm long at 25K is less than 3—5 deg when the pumping energy is 22 joules and 15—20 deg at 92 joules. During the oscillation pulse the wavelength of each mode increases by 0.09Å, while the distance between adjacent modes remains constant at 0.088Å. For a 30-deg heating of the crystal, the total spectral shift of the laser was ~0.6Å, and thus the shift versus the heating rate was ~0.02Å/degree.. The width of spectral modes varied during oscillation from 0.035Å (start) to 0.017Å (end). Results indicate that the various modes are independent of each other only at the start. Splitting of spectral modes into 2 components was observed at the start of oscillation; it amounted to ~0.035Å. The reason for this remains unknown. Orig. art. has: 1 formula and 5 figures.

ASSOCIATION: none

SUBMITTED: 16Aug63 DATE ACQ: 22May64 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 001

Card 2/2

ACCESSION NR: AP4039712 S/0051/64/016/006/1065/1068

AUTHOR: Anan'yev, Yu. A.; Mak, A. A.

TITLE: V[illegible]tion of resonator characteristics in an optical laser during [illegible]neration process

SOURCE: Optika i spektroskopiya, v. 16, no. 6, 1964, 1065-1068

TOPIC TAGS: optical laser, solid state laser, fluorite laser, samarium doped laser, laser resonator

ABSTRACT: The Stokes losses and nonuniform pumping of a solid-state laser can lead to the deformation of the crystal rod and the parallel-plate system. Experiments with a divalent samarium-doped fluorite laser were carried out to investigate the variation of resonator characteristics in the generation process. A crystal rod 8 mm in diameter and 33 mm long with flat ends was used. Dielectric coating about 0.708 μ thick was applied to make the ends reflective. The crystal was pumped by square-wave 700-μsec pulses by a flash lamp

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ACCESSION NR: AP4039712

in an elliptical reflector. In order to investigate deformation due to pumping, two identical crystals were placed separately in each arm of the Mach-Tsender interferometer and only one crystal was excited. Comparative photographs of interferograms show that the thermal deformation of crystal is a function of the initial temperature of the crystal. This is due to an increase in the coefficient of thermal expansion of fluorite with increases in temperature. The difference in the optical path at the axis and at the edge of the rod is 1.5 bands at an initial temperature of 300K and pumping-energy density of 300 J/cm^3 of the crystal. At an initial temperature of 50K, the average temperature increase due to pumping was 12°. The nature of crystal deformation is independent of generation in a crystal. The density of absorbed excitation energy is 35% higher along the crystal axis than the average density in the crystal. Additional deformation occurs in the form of crystal lengthening. This leads to a change in the wavelength of stimulated emission. Orig. art. has: 1 formula and 3 figures.

ASSOCIATION: none

Card 2/3

L 7691-66 EWA(k)/FBD/EWT(1)/EWT(m)/EPF(c)/EEC(k)-2/T/EWP(t)/EWP(k)/EWP(b)/ EWA(m)-2/EWA(h) SCTB/LJP(c) WG/JD/JW

ACC NR: AP5028019 SOURCE CODE: UR/0386/65/002/008/0380/0383

AUTHOR: Yermakov, B. A.; Lukin, A. V.; Mak, A. A.; Prilezhayev, D. S.

ORG: none

TITLE: Monopulse generation with $CaF_2:U^{3+}$ crystals

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu (Prilozheniye), v. 2, no. 8, 1965, 380-383

TOPIC TAGS: solid state laser, laser pulsation, laser

ABSTRACT: This is a continuation of earlier work (Optika i spektroskopiya v. 18, 353, 1965) in which attainment of monopulse generation in the 2.36μ infrared region with $CaF_2:Dy^{2+}$ was reported. In the present paper the authors report attainment of monopulse generation with $CaF_2:U^{3+}$ crystals at wavelengths 2.22 and 2.51 μ, using an experimental setup in which the crystals are cooled to 80—90K by a jet of nitrogen gas evaporated from the liquid phase (Fig. 1). A semitransparent coating with reflection coefficient R = 0.95 ± 0.6 was deposited on one end of the crystal. The cavity switching was by means of a rotating total internal-reflection prism. The pump-lamp ignition was synchronized with a photoelectric system coupled to the prism rotating at 1—2 x 10^4 rpm. The crystals used were 3—55 mm in diameter and 20—30 mm long. The radiation receiver was a Ge:Au photoresistance, and the generated energy was measured with a bolometer. The monopulse lasing at λ_3 = 2.22 μ was of the three-level type (Fig. 2a), with emission energy 0.1 x 10^{-3} J, corresponding to a pulse power of

Card 1/3

L 7691-66
ACC NR: AP5028019

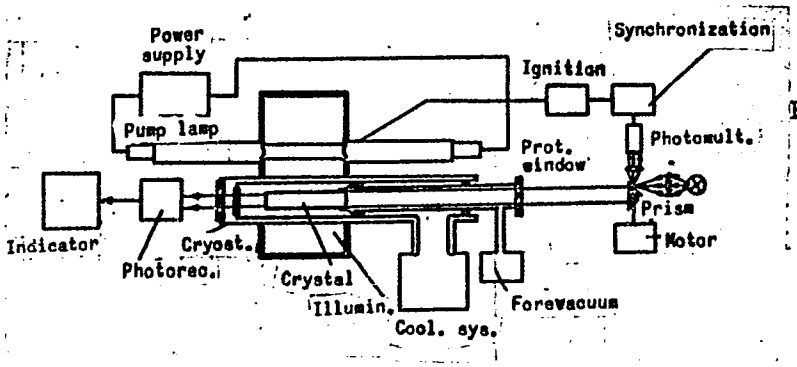

Fig. 1. Experimental setup

~4 x 10^3 W. In several crystals monopulse 4-level generation (λ_4 = 2.51 μ) was obtained, apparently, because of the high concentration of the activator in these crystals. The shape of the pulse was the same as in Fig. 2a. The maximum laser energy in the monopulse was 10^{-3} J in this case (pulse power ~5 x 10^4 W). At smaller prism

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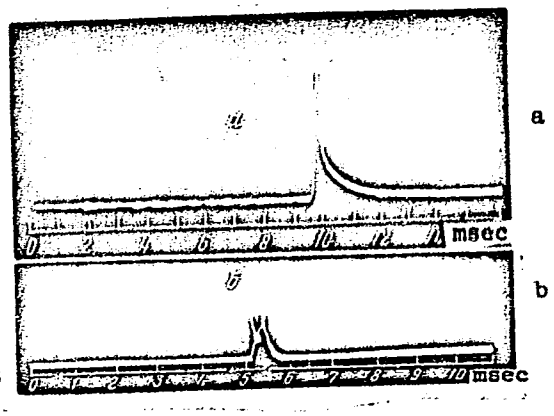
L 7691-66

ACC NR: AP5028019



a

b

Fig. 2. Monopulse oscillograms

speeds, several laser pulses were obtained rather than one (Fig. 2b). Orig. art. has: 2 figures. [02]

SUB CODE: EC/ SUBM DATE: 31Aug65/ ORIG REF: 002/ ATD PRESS: 4141

Card 3/3

L 26613-65 EWG(j)/EWA(k)/FBD/EWP(l)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(h)/EWA(m)-2
Pn-4/Po-4/Pt-4/Peb/Pi-4/P1-4 IJP(c) WO

ACCESSION NR: AP5005060 S/0051/65/018/002/0353/0354

56
42

AUTHOR: Yermakov, B. A.; Lukin, A. V.; Mak, A. A.

25 B

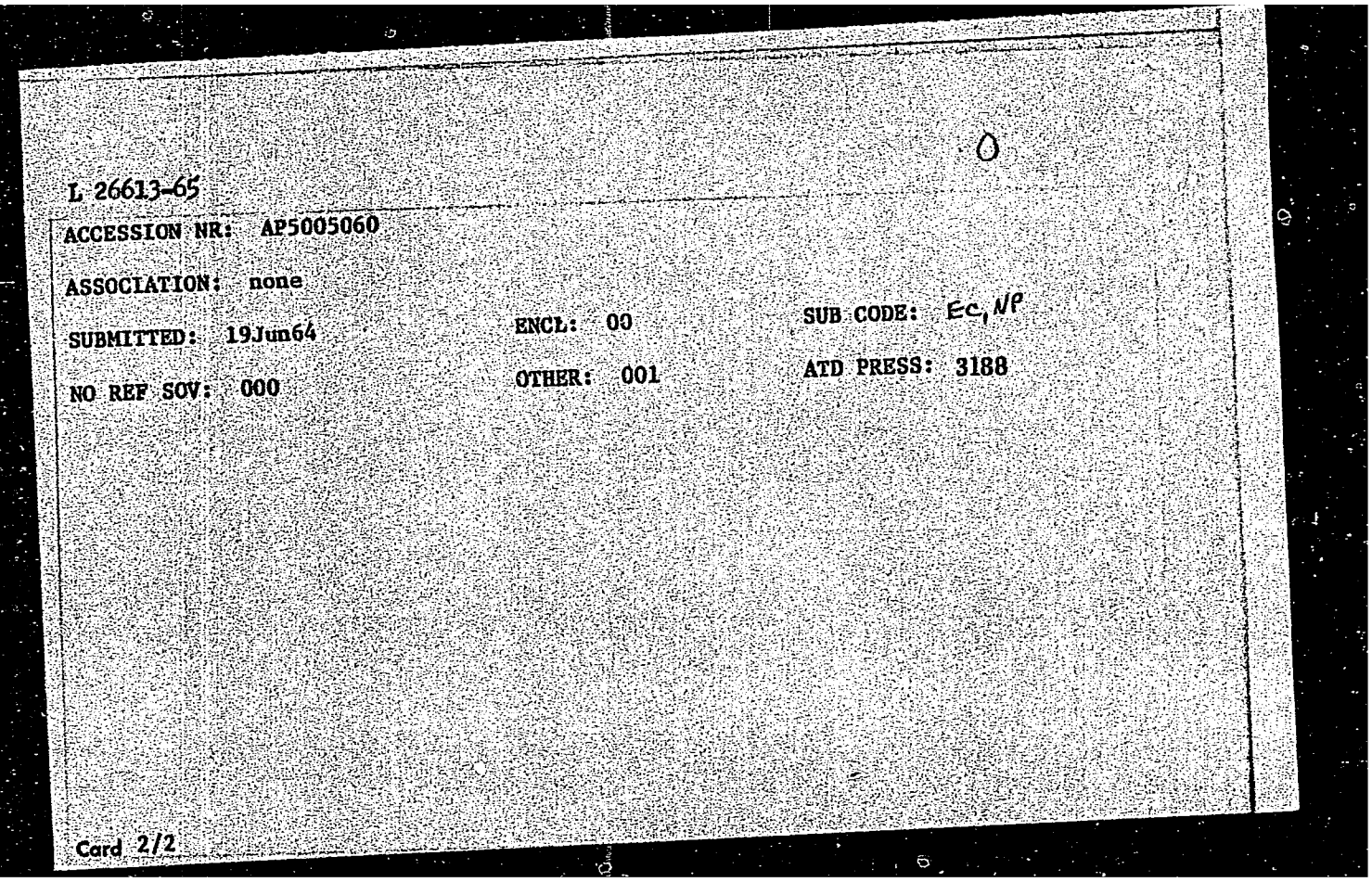
TITLE: Reducing metastable level lifetime in a modulated-Q laser

SOURCE: Optika i spektroskopiya, v. 18, no. 2, 1965, 353-354

TOPIC TAGS: laser, metastable level lifetime, metastable level population, Q modulator, Q spoiler

ABSTRACT: Stored excitation energy is limited by the decrease in effective metastable level lifetime when Q modulation tends to enhance spontaneous emission. The problem was examined in a four-level system in which the population N_M of the metastable level was considerably smaller than the population of the ground state. The dependence of the effective excited state lifetime (τ_{eff}) on the number of stimulated transitions and on the population N_M of the metastable level was determined. In the first approximation τ_{eff} can be regarded as equal to the time constant of the emission decay after the end of the pumping pulse; it was found to be 2.8 msec, considerably smaller than the lifetime τ = 20 msec determined from scintillation decay. The results obtained show that the lifetime of the metastable level can decrease considerably when the operation is conducted at a single pulse regime. Orig. art. has: 1 figure and 2 formulas. [JA]

Card 1/2



L 26613-65

ACCESSION NR: AP5005060

ASSOCIATION: none

SUBMITTED: 19Jun64 ENCL: 00 SUB CODE: Ec, NP

NO REF SOV: 000 OTHER: 001 ATD PRESS: 3188

Card 2/2

L 25312-65 EWA(k)/EWT(l)/EEC(k)-2/T/EEC(b)-2/EWP(k)/EWA(m)-2 Po-4/Pf-4/Pi-4/
Pl-4 IJP(c) WG/JHB

ACCESSION NR: AP5004366 S/0056/65/048/001/0007/0012

AUTHOR: Anan'yev, Yu. A.; Mak, A. A.; Sedov, B. M.

TITLE: Amplification of light by four-level quantum systems

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 1, 1965, 7-12

TOPIC TAGS: four level system, light amplification, $CaF_2:Sm^{2+}$ laser, paramagnetic laser, laser amplifier

ABSTRACT: A study was made of the amplification of light in a four-level laser system in which the signal wavelength corresponded to the maximum coefficient of negative absorption of the medium. The theoretical studies, based on a probability method, were made for the steady and transient states of amplification. The experimental investigation was limited to the measurement of the gain in a steady state. For this purpose, the authors used $CaF_2:Sm^{2+}$ crystals at 20K. Two cylindrical rods 30 mm long and 8 mm in diameter with coated plane ends and unpolished sides were placed in a cryostat. One of the rods, pumped by a pulse 25—30 μsec in duration, acted as a signal source; the other, pumped by a longer (150 μsec) pulse, was the amplification. Gain measurements were carried out at various pumping intensities.

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L 25312-65

ACCESSION NR: AP5004366

The results show that gain decreased when signal intensity increased. This relationship was most noticeable at high gain. The theoretical and experimental results were in good agreement, except when the coefficient of amplification was equal to or exceeded 7. In this case, the disagreement was apparently due to a decrease in the lifetime of the excited state (in the presence of considerable population inversion) which leads in turn to a decrease in the gain. Orig. art. has: 6 formulas and 3 figures. [YK]

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova (State Optical Institute)

SUBMITTED: 18Apr64 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 003 OTHER: 002 ATD PRESS: 3184

Card 2/2

L 2082-66 EWA(k)/FBD/EWT(1)/EEC(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c) WG
ACC NR: AP5026595 SOURCE CODE: UR/0056/65/049/004/1068/1071

AUTHOR: Galaktionova, N. M.; Yegorova, V. F.; Mak, A. A.

ORG: State Optical Institute (Gosudarstvennyy opticheskiy institut)

TITLE: The effect of anomalous dispersion on the stimulated emission spectrum of crystals

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1068-1071

TOPIC TAGS: solid state laser, stimulated emission, dispersion, anomalous dispersion, spectroscopy, dysprosium ion, uranium ion

ABSTRACT: A study was made of the stimulated emission spectra of $CaF_2:Dy^{2+}$ crystals at $\lambda = 2.36\ \mu$, and $CaF_2:U^{3+}$ crystals at $\lambda = 2.22\ \mu$ (see Fig. 1). The crystal temperature was varied in the 30—100K range. The dependence of the luminescence linewidth on temperature was established for both crystals. Spectroscopic investigations carried out by means of photoelectric equipment with a Fabry-Perot etalon (base $L = 10—30$ mm) showed that in the above temperature range the $CaF_2:U^{3+}$ crystals exhibited a Lorentz line shape, and the $CaF_2:Dy^{2+}$ a Gaussian shape, which is indicative of a nonuniform line broadening in the $CaF_2:Dy^{2+}$ crystals. Multilayer dielectric mirrors with a 98% reflection coefficient (at $\lambda = 2.36\ \mu$) were used. Spectrum scanning was carried out with the etalon inside a variable-pressure baric chamber. The displacement of modes (up to 0.1 Å) due to temperature instability was considerable.

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The number of displacements for $CaF_2:Dy^{2+}$ was from 1 to 3, depending on the crystal temperature, excess threshold energy, and mirror transmissivity. The decrease in

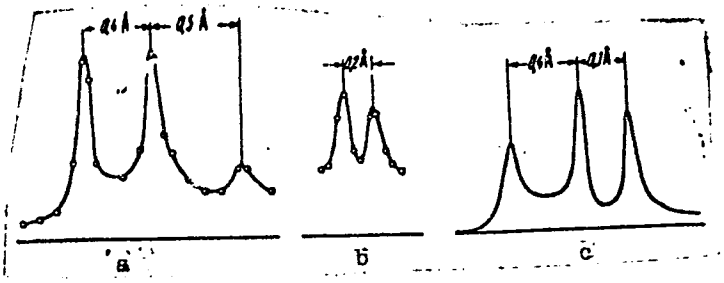

Fig. 1. Stimulated emission spectra

a - Pulsed mode, L = 40.5 mm, T = 97K; b - pulsed mode, confocal resonator, L = 36.5 mm, T = 94K; c - continuous mode, L = 40.5 mm, T = 80K.

temperature and the corresponding narrowing of the luminescence line caused a decrease in $\Delta\lambda$ (difference in wavelength of two adjacent axial modes) and, in the case of $CaF_2:Dy^{2+}$, disturbed the mode equidistance. The averaged experimental data are presented in Table 1. The data indicate that the effect of anomalous dispersion of

Table 1. Averaged experimental data

Crystal	L, mm	Mirror transmissivity, %	Operation	T, °K	No. of modes	Δλ, Å	Mode intensity ratio	Δλ/Δλp
$CaF_2:Dy^{2+}$	29	20	Continuous, threshold	~80	1			
			Continuous, super-threshold-3	~80	2	0.47	1:0.07	0.7
$CaF_2:Dy^{2+}$	40.5	20	Continuous, threshold	~80	2	0.46	0.65:1	0.95
			Continuous, super-threshold-3	~80	3	0.4; 0.3	0.5:0.5:1	0.83; 0.62
			Pulsed	98	3	0.43 0.46	1:0.9:0.5	0.89; 1.0
$CaF_2:Dy^{2+}$	40.5	2	Pulsed	<72	1			
				74	2	0.4		0.83
				86	2	0.45		0.93
				100	2	0.48		1.0
$CaF_2:Dy^{2+}$	36.5 Confocal resonator	5	Pulsed	94	2	0.2	0.7:1	0.74
$CaF_2:U^{3+}$	23	53	Pulsed	28	1			
				46	2	0.3	1:0.7	0.39
				68	>3	0.54 equidist modes		0.71
				86	>4	0.76 equidist modes		

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L 2082-66
ACC NR: AP5026595

the stimulated emission spectrum of crystals, which leads to mode tightening, can be considerable. When no thermal effects are assumed, mode tightening is independent of pumping. A fully quantitative interpretation of the data would require consideration of effects associated with the field distribution in a resonator and other effects (H. Haken, H. Sauermann, Zs. Phys., 173, 261, 1963; 176, 47, 1963). [YK]
Orig. art. has: 1 table and 3 figures.

SUB CODE: SS, OP/ SUBM DATE: 21May65/ ORIG REF: 006/ OTH REF: 003/ ATD PRESS: 4122

Card 4/4

ACC NR: AP6015433 SOURCE CODE: UR/0051/66/020/005/0890/0897

AUTHOR: Yegorova, V. F.; Zubkova, V. S.; Mak, A. A.; Prilezhayev, D. S.

ORG: none

TITLE: Luminescence and stimulated emission spectrum of CaF_2-U^{3+} crystals

SOURCE: Optika i spektroskopiya, v. 20, no. 5, 1966, 890-897

TOPIC TAGS: absorption spectrum, excitation spectrum, luminescence spectrum, crystal phosphor, fluorite, color center, uranium

ABSTRACT: Data are given from a detailed analysis of the absorption, luminescence, and stimulated emission spectra of fluorite crystals activated by trivalent uranium ions at 4.2-300°K. A vacuum monochromator with a resolution of 1.5-3 Å at λ=2.5 μ was used for taking the absorption and luminescence spectra. An incandescent lamp with a tungsten filament was used for exciting luminescence in the crystal. An FEU-22 photomultiplier and a cooled lead sulfide resistor were used as detectors. The recording system was made up of an amplifier, a synchronous detector, and a PS1-02 electronic potentiometer. It was found that the absorption spectra of these crystals is due to at least four types of color centers. The specimens were divided into two classes, the first being lilac in color and the second--red. Each type has its distinct characteristics in absorption, luminescence, and excitation spectra. Crystals containing both

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UDC: 621.375.9 : 535

types of centers (mixed type) show more complex spectra. The difference between crystals of the first and second type is most pronounced in the absorption and luminescence spectra in the near infrared region. The spectrum for crystals of the first type is rather simple in the 2.1–2.6 μ region. Absorption resonance lines are observed at 2.15 and 2.223 μ and an additional line is observed in the luminescence spectrum at 2.43 μ which disappears at helium temperatures as well as a line at 2.512 μ which is observed at low temperatures. Luminescence excitation in crystals of the first type is due chiefly to absorption in the 0.4–0.6 μ region of the spectrum. The spectrum for crystals of the second type is more complex with six resonance lines at 2.15, 2.252, 2.246, 2.237, 2.228, and 2.221 μ which may be due to transitions between the ground level and splitting components of the $^4I_{11/2}$ state. Luminescence excitation for crystals of the second type takes place chiefly in the 0.7–1.2 μ spectral region due to wide absorption bands. Experimental data were used for constructing the diagrams of lower levels for crystals of both types. Considerable interaction is observed between centers of the first and second type in mixed crystals. Crystals of the first type show stimulated emission in three spectral bands: 2.512 μ, 2.435 μ, and 2.223 μ. The positions of the emission peak with respect to time for the 2.512 and 2.223 μ bands show a considerable degree of correlation: the emission maximum in one band corresponds to the minimum in the other. This indicates that these bands have a common initial upper level. Stimulated emission is observed in crystals of the second type in the 2.518 and 2.61 μ bands. Stimulated emission in crystals of this type is due basically to absorption bands at 0.8 and 0.9 μ. Mixed crystals show simul-

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ACC NR: AP6015433

taneous emission in the 2.512, 2.518 and 2.518 μ bands. The interaction between centers of the first and second type in these crystals is discussed. Orig. art. has: 7 figures.

[14]

SUB CODE: 20/ SUBM DATE: 22Jun64/ ORIG REF: 005/ OTH REF: 003/
ATD PRESS: 5104

Card 3/3 CC

L 44076-66 EWT(1)/EEC(k)-2/T/EWP(k) IJP(c) WG
ACC NR: AP6030713 SOURCE CODE: UR/0368/66/005/002/0167/0171

AUTHOR: Antoshina, Ye. N.; Kozlov, N. A.; Mak, A. A.; Stepanov, A. I.; Prilezhayev, D. S.

ORG: none

TITLE: Efficiency of reflectors for solid-state lasers

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 2, 1966, 167-171

TOPIC TAGS: solid state laser, laser reflector, pumping source, xenon lamp

ABSTRACT: Methods of determining the efficiency of solid-state laser reflectors were considered. The efficiency of elliptic- and circular-cylinder reflectors and the distribution of pumping energy in cylindrical neodymium-glass rods were determined experimentally. Elliptic-cylinder reflectors were prepared from metal with a surface coefficient of reflection R = 0.8—0.9. The flashlamp and the glass rod were placed along the major axis. Circular-cylinder reflectors were made of glass tube whose outer surface was silver-coated (R = 0.9). The reflector end-caps were made of metal (R = 0.8—0.9). The flashlamp and specimen were parallel to the cylinder axis and were equidistant from the center. The standard reflector used in the comparative experiments consisted of four spherical mirrors with R = [illegible]. The efficiency of the elliptic-and circular-cylinder reflectors was determined from the comparison of the generation energy of power therein with that of the standard reflector. The maximum-

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L 44076-66

ACC NR: AP6030713

mental results, shown in Table 1, indicate that [illegible] diameter for which the efficiency is a maximum. The pump light distribution in the

Table 1. Efficiency of [illegible]

Type of Reflector	Major axis	Diameter	Distance between lamp and rod axes	Dimensions of flashlamp and rod dia. mm	Dimensions of flashlamp and rod length mm	Efficiency experimental	Efficiency calculated
Standard							
Elliptic cylinder							
Circular cylinder							

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L 44076-66

ACC NR: AP6030713

with results obtained elsewhere (Yu. A. Anan'yev and Ye. A. Koroley, [illegible], 1964). All data were found to be in agreement. The efficiency of circular-cylinder reflectors with optimal parameters may be as high as 75%. Orig. art. has: 1 table and 4 figures. [YK]

SUB CODE: 20/ SUBM DATE 09Nov65/ ORIG REF: 005/ OTH REF: 011/ ATD PRESS: 5075

Card 3/3

ACC NR: AP6008040 SOURCE CODE: UR/0020/66/166/004/0825/0828

AUTHOR: Anan'yev, Yu. A.; Balashov, I. F.; Mak, A. A.

ORG: none

TITLE: Theory of monopulse operation of lasers

SOURCE: AN SSSR. Doklady, v. 166, no. 4, 1966, 825-828

TOPIC TAGS: laser pulsation, laser radiation, laser emission, laser energy

ABSTRACT: The theoretical examination of the monopulse mode of laser operation made in this paper includes the processes following the instantaneous increase in resonator Q as well as the process of energy accumulation in the active medium. When the inverted population is large, spontaneous emission is amplified and the lifetime of the excited state is decreased. This, together with the light leakage from the active medium, is one of the main factors limiting energy accumulation and consequently the generated power as well. The media considered are three- and four-level solid state rods with polished and mat side surfaces. Energy accumulation in the active medium must continue for a time exceeding the effective lifetime of the excited state in order to obtain the maximum population inversion. The population inversion is found for a three- and a four-level medium, taking into account spontaneous and induced radiation. Equations are derived for calculating the number of quanta induced by spontan-

UDC: 621.378.3

L 11695-66
ACC NR: AP6008040

eous quantum of a given frequency, taking losses into account. The effective length of the rods is calculated and the average photon paths incident to the walls are described in relation to rod diameter. A more effective method is given for finding the number of spontaneously induced quanta, based on the spectral density of the illumination. Conditions are outlined for the generation mode and equations are given for finding maximum pulse power, generation energy, and pulse duration. Calculations are made for both three- and four-level systems and results for maximum power are plotted. Presented by Academician A. A. Lebedev on 31 May 1965. Orig. art. has: 11 formulas, 2 figures.

SUB CODE: 20/ SUBM DATE: 27May65/ ORIG REF: 006/ OTH REF: 003

Card 2/2 af

L 45781-66 EEC(k)-2/EWP(k)/EWT(l)/EWT(m)/T/EWP(e) IJP(c) WG/WH
ACC NR: AP6027899 SOURCE CODE: UR/0368/66/005/001/0051/0055

AUTHOR: Anan'yev, Yu. A.; Kozlov, N. A.; Mak, A. A.; Stepanov, A. I.

71
69
B

ORG: none

TITLE: Thermal deformation of the resonator of a solid-state laser

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 1, 1966, 51-55

TOPIC TAGS: solid state laser, laser resonator, thermal deformation, thermal stress, temperature distribution

ABSTRACT: The authors investigate the thermal deformation of a laser resonator due to nonuniform heating by the active material. The experiment was carried out with cylindrical specimens of neodymium glass (80 mm long, 5 mm in diameter) with frosted lateral faces pumped by a xenon flashlamp. The experimental set-up used is described and illustrated (Fig. 1). Considerable deformation of the resonator was observed in all the modes tested. A comparison of the experimental data with the calculations performed revealed that with increasing temperature drop in the specimen, the deviation of the experimental and the calculated quantities of the optic behavior increases, reaching a peak at T = 38C. In order to determine the reasons for this divergence,

Card 1/2 UDC: 621.378.325

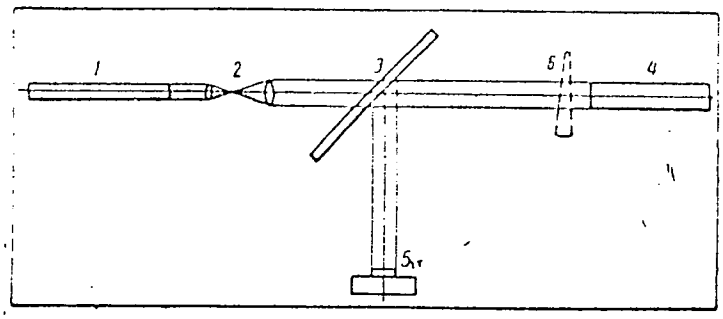

Fig. 1. Optical diagram of the set-up

1 - gaseous laser; 2 - telescope for increasing beam diameter; 3, 6 - transparent plates; 4 - test specimen; 5 - camera.

a study was made of the deformation of the end faces of the specimens, as well as of the birefringence in them due to thermal stresses. The results obtained show that the deformation of a laser resonator during optical pumping of an activated specimen is due to the nonuniformity of the temperature distribution in the specimen as well as to the thermal stresses resulting from this nonuniformity. Furthermore, at high temperature drops the effect due to these stresses is substantial. In conclusion, the authors express their gratitude to V. S. Doladugina and Ye. G. Berezina for useful discussions. Orig. art. has: 3 formulas, 1 table, and 3 figures. [26]

SUB CODE: 20/ SUBM DATE: 05Jul65/ ORIG REF: 008/ OTH REF: 002 / ATD PRESS: 5085

ACC NR: AP6036692 SOURCE CODE: UR/0237/66/000/011/0025/0029

AUTHOR: Kozlov, N. A.; Mak, A. A. (Candidate of sciences); Sedov, B. M.

ORG: none

TITLE: Solid-state laser pumped by solar radiation

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 11, 1966, 25-29

TOPIC TAGS: solid state laser, paramagnetic laser, samarium doped laser, dysprosium doped laser, neodymium glass laser, solar radiation, laser pumping, solar radiation pumping

ABSTRACT: An experimental study was made of cw $CaF_2:Dy^{2+}$, $CaF_2:Sm^{2+}$, and $CaWO_4:Nd^{3+}$ lasers pumped by solar radiation. The $CaF_2:Dy^{2+}$ and Sm^{2+} crystals were 8 mm long and 3 mm in diameter and the $CaWO_4:Nd^{3+}$ crystals, 11 and 3 mm, respectively, their ends being coated with a highly reflective dielectric. The optical system for the concentration of the solar radiation is shown in Fig. 1. The parabolic mirror is made of aluminum-reinforced cast glass. The mirror aperture D (regulated by variable diaphragms 12) was 55 to 150 cm and its focal length 62.5 cm. The mirror was independently suspended and could rotate in two planes (0 to 360° horizontally, and -10 to + 90° vertically). A conical cell 3, cooled by an aqueous solution of sodium nitrite (or bichromate), was used to cut off the u-v radiation; its transmission (with filters 9) in the 0.5—1.0 μ region was 85—90%. A plane octahedral (140 cm between

UDC: 621.375.9

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ACC NR: AP6036692

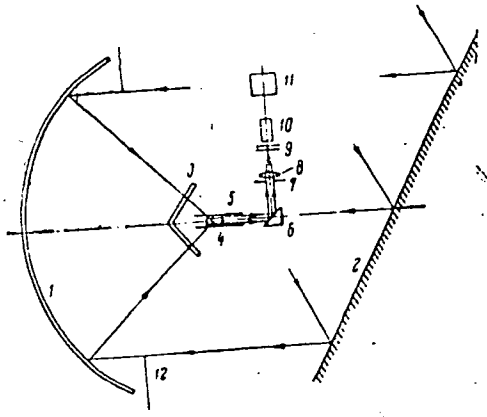

Fig. 1. Laser with solar radiation pumping

1 - Parabolic mirror; 2 - plane mirror; 3 - conical cell; 4 - active medium: 5 - heat exchanger; 6 - prism; 7 - diaphragm; 8 - lens; 9 - light filters; 10 - thermal sensor; 11 - photomultiplier; 12 - variable diaphragm.

sides) aluminum mirror 2 was used to direct solar rays onto the parabolic mirror in those cases when low-temperature (30—77K) crystals were used with complicated cooling systems, so that the active material remained undisturbed in the region of maximum illumination of the parabolic mirror as it followed the sun. Other components of the radiation-concentration system are described in detail. In the case of the $CaF_2:Dy^{2+}$ laser, the active material was cooled by liquid O_2 precooled by N to 77K, and cw generation was achieved at D = 50 cm, although it was interrupted several

Card 2/3

ACC NR: AP6036692

seconds later due to the insufficient cooling of the active medium. In the case of the $CaF_2:Sm^{2+}$ laser, the active material was placed in a Pyrex-glass cell, also cooled by helium gas (5—6K, flowing at 140 g/cm^2·sec). The undesirable u-v was filtered by an aqueous solution of sodium nitrite. Although the experiments were carried out during bright, cloudless days, no generation was achieved in $CaF_2:Sm^{2+}$ even at D = 150 cm, perhaps because of the overheating of the crystal or insufficient pumping. In the case of the $CaWO_4:Nd^{3+}$ laser, the active material was placed in a water-cooled glass tube (flowing at 1—2 liters/min). The u-v radiation was eliminated by an aqueous solution of sodium nitrite flowing at 10 liter/min. Cw generation was observed during cloudless days from 11:00 A. M. to 2:00 P. M. The smallest D for which cw generation at 1.06 μ occurred was 50—100 cm, depending on the quality of the crystal. The maximum generation power, 130 mw, was obtained at D = 150 cm. Stable operation was observed at D = 110 cm. Cw generation was interrupted when the mirror (D = 150 cm) was exposed to radiation for 30—40 sec. Orig. art. has: 5 figures.

SUB CODE: 20/ SUBM DATE: 31Mar66/ ORIG REF: 007/ OTH REF: 007/
ATD PRESS: 5108

Card 3/3

ACC NR: AP7004139 SOURCE CODE: UR/0051/67/022/001/0068/0073

AUTHOR: Galaktionova, N. M.; Yegorova, V. F.; Zubkova, V. S.; Mak, A. A.

ORG: none

TITLE: Spectroscopic investigation of $CaF_2:Dy^{++}$ crystals

SOURCE: Optika i spektroskopiya, v. 22, no. 1, 1967, 68-73

TOPIC TAGS: calcium fluoride, activated crystal, luminescence spectrum, absorption spectrum, line width, line broadening, chemical reduction, DYSPROSIUM, IONIC CRYSTAL

ABSTRACT: The authors used high-resolution apparatus, consisting of a diffraction-grating monochromator and of a Fabry-Perot inteferometer combined with a monochromator, to investigate the luminescence and absorption spectra of $CaF_2:Dy^{++}$ crystals. Two types of crystals were tested, reduced by exposure to gamma rays and by treatment with calcium vapor. The former showed much higher absorption at 3 [illegible] nm wavelength than the latter, which is attributed [illegible] to the formation of Dy^{++}, and to the production of other centers in the crystal. The latter showed [illegible] near 700 nm. The two types of crystals differed also in their thermal [illegible] stability and in their degree of discoloring. The luminescence spectra [illegible] of two line groups near 2.3 and 2.5 μ. Lowering the temperature [illegible] ber of lines in the groups. The line contours were also temperature dependent, changing from Maxwellian to Lorentzian with rising temperature. The [illegible] line widths were found to be quite small, reaching 0.04-0.08 cm^{-1} at 4.2K, with

Card 1/2 UDC: 535.[illegible]:54[illegible]

ACC NR: AP7004139

weak temperature dependence. The broadening is assumed to be inho[illegible] chemical reduction results in a lower Dy^{++} ion concentration (up to [illegible] Dy in the crystal, than reduction in calcium vapor (up to 15%). The concentration quenching of the luminescence is negligible. An empirical scheme is presented for the lower levels of Dy^{++} in the CaF_2. Orig. art. has: 8 figures. [02]

SUB CODE: 20/ SUBM DATE: 29May65/ ORIG REF: 002/ OTH REF: 003
ATD PRESS: 5115

Card 2/2

ACC NR: AP7006122 SOURCE CODE: UR/0056/67/[illegible]

AUTHOR: Anan'yev, Yu. A.; Mak, A. A.; [illegible]

ORG: none

TITLE: Angular divergence of emission from a solid state laser

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, [illegible]

TOPIC TAGS: solid state laser, paramagnetic laser, laser beam, neodymium glass, calcium fluoride, NEODYMIUM LASER, LASER CAVITY

ABSTRACT: To determine the influence of pump and cavity parameters on the divergence of a solid state laser, and to ascertain the degree to which laser mode selection is affected by the connection between the angle and energy characteristics of the laser, the authors measured the beam divergence of neodymium-glass and $CaF_2:Sm^{2+}$ lasers whose pump and cavity parameters were varied. The beam divergence was determined by a photographic procedure. The pump was a straight xenon flash lamp in an elliptic reflector. The cavity length ranged from 0.5 to 300 cm. The pump energy did not exceed 50 - 70 J for the $CaF_2:Sm^{2+}$ laser and 130 J for the neodymium-glass laser. The beam divergence was found to be practically independent of the excess energy over threshold and of the reflection coefficient of the cavity mirror. The generated power, the beam divergence, and the threshold of pump intensity all decreased with increasing cavity length, but by varying degrees, the divergence being inversely proportional to the square root of the cavity length in an appreciable range of lengths. It is concluded that the experimentally observed beam divergence is governed by the excitation of a

Card 1/2 UDC: none

ACC NR: AP7006122

large number of competing transverse modes in the laser, with diffraction losses playing the major role in this competition. Using quantitative data from an earlier study (ZhTF v. 37, 139, 1967), it is shown that by judicious selection of the modes it is possible to reduce the beam divergence to a value close to the diffraction limit, without greatly reducing the generation power. Orig. art. has: 5 figures, 3 formulas, and 2 tables. [02]

SUB CODE: 20/ SUBM DATE: 25May66/ ORIG REF: 013/ OTH REF: 006 /
ATD PRESS: 5117

Card 2/2

VIKHTER, Yakov Isaakovich; MAK, Isaak L'vovich; SHVAGIREV, Mikhail Petrovich; PECHURO, S.S., nauchnyy redaktor; TYUTYUNIK, M.S., redaktor; PANOVA, L.Ya., tekhnicheskiy redaktor.

[Production of gypsum and gypsum construction elements] Proizvodstvo gipsa i gipsovykh stroitel'nykh detalei. Moskva, Gos. izd-vo lit-ry po stroit. materialam, 1954. 140 p. (MLRA 8:2)
(Gypsum) (Building materials)

MAK, I.L.; RATINOV, V.B.; SILENOK, S.G.; YUSHKEVICH, M.O., nauchnyy red.; CHERKINSKAYA, A.L., red. izd-va; SHERSTNEVA, L.V., tekhn. red.

[Manufacture of gypsum and gypsum products] Proizvodstvo gipsa i gipsovykh izdelii. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 199 p. (MIRA 15:2)
(Gypsum)

MAK, I.L., inzh.; KATANOV, D.D., inzh.

Still waste is a valuable mineralizer for the production of cement fiberboard. Stroi.mat. 9 no.3:15-17 Mr '63.
(MIRA 16:4)

(Fiberboard)

ANASTASIADI, A.P.; BOROVSKIY, V.R.; VYBORNOV, G.V.; KOPELYANSKIY, G.D.; MAK, I.L.; PECHURO, S.S.; PIYEVSKIY, I.M.; RACHEVSKAYA, K.D.; REYZNER, Yu.B.; RYBAK, L.L.; TSEPELIOVICH, M.R.; SHUMAKHER, L.I.; YUSHKEVICH, M.O.[deceased]; AGEYENKO, Yu.G., nauchnyy red.; BELUGIN, A.T., nauchnyy red.; KOGAN, G.S., nauchnyy red.; KRZHEMINSKIY, S.A., nauchnyy red.; MITSKEVICH, M.I., nauchnyy red.; SILENOK, S.G., nauchnyy red.; TRILESNIK, Z.Ye., nauchnyy red.; ZUBAREV, K.A., glav. red.; TROFIMOV, I.P., red.; SKRAMTAYEV, B.G., glav. red.; BALAT'YEV, P.K., red.; KITAYEV, Ye.N., red.; KITAYGORODSKIY, I.I., red.; ROKHVARGER, Ye.L., red.; KHOLIN, I.I., red.; CHERKINSKAYA, R.L., red.; RODIONOVA, V.M., tekhn. red.

[Manual on the production of gypsum and gypsum products] Spravochnik po proizvodstvu gipsa i gipsovykh izdelii. [By] A.P. Anastasiadi i dr. Pod red. K.A.Zubareva. Moskva, Gosstroizdat, 1963. 464 p. (MIRA 16:7)
(Gypsum) (Gypsum products)

KAN, K.D., kand.tekhn.nauk; MAK, L.I., inzh.

Use of single-acting piston(reciprocating) compressors for the generation of low temperatures. Khol.tekh. 40 no.1:12-16 Ja-F '63.
(MIRA 16:3)

1. TSentral'noye konstruktorskoye byuro kholodil'nogo mashinostroyeniya.
(Refrigeration and refrigerating machines)

KAN, K.D., kand.tekhn.nauk; MAK, [illegible] I., inzh.; MARSHAK, A.M., kand.khim.nauk; YEVSEYEVA, [illegible].S., inzh.

Investigating the refrigeration compressor operated with Freon-143. Khol.tekh. 40 no.3:5-9 My-Je '63. (MIR 16:9)

1. TSentral'noye konstruktorskoye byuro kholodil'nogo mashinostroyeniya (for Kan, Mak). 2. Gosudarstvennyy institut prikladnoy khimii (for Marshak, Yevtseyeva).
(Refrigerants) (Refrigeration and refrigerating machinery)

KAGAN, Yu.B.; BASHKIROV, A.N.; KLIGER, G.A.; CHZHOU CHZHAO-DI [Chou Chao-ti]; MAK, N.Ye.

Reaction between octyl alcohols and ammonia under the hydrogen pressure on a fused iror catalyst. Neftekhimia 1 no.3: 403-410 My-Je '61. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

SLEPUKHA, I.M.; MAK, R.M.

Surgical treatment of pulmonary tuberculosis in children and adolescents in the sanatorium. Ped., akush. i gin. 23 no.5:16-20 '61.
(MIRA 14:12)

1. Khirurgicheskoye otdeleniye detskogo tubsanatoriya im. Gor'kogo (glavnyy vrach sanatoriya - M.I.Gerbut [Herbut, M.I.], g. Kiyev.
(TUBERCULOSIS) (CHILDREN--SURGERY)

SLEPUKHA, I.M.; MAK, R.M.

Single-stage operation performed on a child for a broncho-diverticulo-esophageal fistula and pulmonary cirrhosis with bronchiectasis. Khirurgiia 38 no.12:98-101 D '62.

(MIRA 17:6)

1. Iz khirurgicheskogo otdeleniya detskogo tuberkuleznogo sanatoriya imeni M. Gor'kogo (glavnyy vrach M.I.Gerbut'), Kiyev, Pushcha-Voditsa.

MAK, S. L.; STAROSEL'SKIY, A. A. ; ZABLONSKIY, K. I.

Bearings (Machinery)

Breakdown of one bearing joint. S. L. Mak, A. A. Staroseľskiy, K. I. Zablonskiy. Vest. mash. 31 No. 10 1951.

Monthly List of Russian Accessions, Library of Congress, September 1952 UNCLASSIFIED

DOBROVOL'SKIY, Viktor Afanas'yevich, doktor tekhnicheskikh nauk, zasluzhennyy deyatel' nauki i tekhniki; ZABLONSKIY, Konstantin Ivanovich; MAK, Solomon L'vovich; RADCHIK, Aleksandr Semenovich; ERLIKH, Lazar' Borisovich; PINEGIN, S.V., doktor tekhnicheskikh nauk, professor, retsenzent; ACHERKAN, N.S., doktor tekhnicheskikh nauk, professor, otvetstvennyy redaktor; ZALOGIN, N.S., redaktor izdatel'stva; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Machine parts] Detali mashin. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 618 p. (MIRA 10:2)

1. Odesskiy politekhnicheskiy institut (for Dobrovol'skiy, Zablonskiy, Mak, Radchik, Erlikh)
(Machinery--Design)

Mak, S. L.

124-1957-10-12256

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 10, p 145 (USSR)

AUTHORS: Mak, S. L., Oleynik, N.V., Pronin, V. M.

TITLE: The Fatigue Strength of Samples With Cross-sectional Openings and Partial Drillings (Ustalostnaya prochnost' obraztsov s poperechnymi otverstiyami i zasverlovkami)

PERIODICAL: Nauch. zap. Odessk. politekhn. in-t, 1956, Vol 9, pp 55-60

ABSTRACT: The results of fatigue tests on samples made from normalized steel 6 and steel 40X are reported in the article. The cross-sectional openings and blind drillings were performed with a 3-mm drill bit on steel-6 specimens 15-mm in diameter and with an 8-mm drill bit on steel 40X specimens 12-mm in diameter. The tests were carried out on a NU machine on the basis of 5×10^6 cycles. It was established that in both of the materials the fatigue limit and the effective stress concentration factor K_σ is practically the same for the specimens with openings and those with partial drillings. The tests performed on specimens having five closely spaced drillings equal in depth, did not show any effects of mutual stress alleviation. Increasing the size of the crosspieces between the drillings had an insignificant effect on the fatigue limit;

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The Fatigue Strength of Samples With Cross-sectional (cont.)

the magnitude of K_σ was slightly decreased. The assumption is voiced that by changing the keyway length, the limit of fatigue would not alter noticeably. In all cases the fatigue failure commenced at the edges of openings or drillings.

G. A. Tulyakov

Card 2/2

DOBROVOL'SKIY, Viktor Afanas'yevich, zasluzhennyy deyatel' nauki i tekhniki, doktor tekhnicheskikh nauk, professor; ZABLONSKIY, Konstantin Ivanovich, MAK, Solomon L'vovich; RADCHIK, Aleksandr Semenovich; ERLIKH, Lazar' Borisovich; PINEGIN, S.V., doktor tekhnicheskikh nauk, professor, retsenzent; ACHERKAN, N.S., doktor tekhnicheskikh nauk, professor, otvetstvennyy redaktor; ZALOGIN, N.S., redaktor izdatel'stva; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Machine parts] Detali mashin. Izd. 2-oe, ispr. Kiev, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 618 p. (MLRA 10:8)
(Machinery--Design)

MAK, S.L., inzh.; SHTAYGER, Ye.V., inzh.

Devices for measuring stresses in ropes. Stroi. i dor. mashinostr.
3 no.9:24-25 S '58. (MIRA 11:10)
(Rope--Testing)

MAK, S.L., kand.tekhn.nauk, dots.

Strength of thread joints subjected to variable loads. Izv. vys.ucheb.zav.; mashinostr. no.5:53-55 '58. (MIRA 12:5)

1. Odesskiy politekhnicheskiy institut.
(Screw threads--Testing)

25(2) PHASE I BOOK EXPLOITATION SOV/2729

Dobrovol'skiy, Viktor Afanas'yevich, Konstantin Ivanovich Zablonskiy, Solomon L'vovich Mak, Aleksandr Semenovich Radchik, and Lazar' Borisovich Erlikh

Detali mashin (Machine Elements) 3rd ed., rev. and enl. Kiyev, Mashgiz, 1959. 581 p. 100,000 copies printed.

Reviewer: S.V. Pinegin, Doctor of Technical Sciences, Professor; Resp. Ed.: N. S. Acherkan, Doctor of Technical Sciences, Professor; Ed.: N.S. Zalogin; Chief Ed. (Southern Division, Mashgiz): V.K. Serdyuk, Engineer.

PURPOSE: This textbook is intended for students of institutions of higher technical education specializing in machinery construction and mechanical engineering.

COVERAGE: This is a textbook for the course, Machine Elements. It is a third edition, revised and enlarged. Design problems and basic theory are emphasized. Machine parts dealt with include joints, transmissions, axles, shafts, bearings, couplings, clutches, springs, and housings. Recently developed designs of machine parts and new methods of calculation have been added. Chapters dealing with material offered in other courses have been abridged or deleted. The authors thank the responsible editor for

Card 1/15

suggestions. References follow each chapter.

TABLE OF CONTENTS:

S/123/61/000/020/014/035
A004/A101

AUTHORS: Mak, S. L., Oleynik, N. V., Pronin, V. M.

TITLE: Investigating the effect of stress concentrations near the location of transverse holes and keyways

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 20, 1961, 21, abstract 20B93 ("Nauchno. zap. Odessk. politekhn. in-t", 1959, v. 14, 96-103)

TEXT: The authors present the results of investigating the effect of stress concentrations near transverse holes and keyways on the fatigue strength. The tests were carried out on steel specimens. It was found that the coefficient of stress concentration K_σ is higher for transverse blind holes with a flat bottom than for through holes or blind holes with a spherical-shaped bottom. A transverse threaded hole increases K_σ. The application of relieving notches near the hole, pressing the holes with balls, countersinking of the hole, pressing a bushing into the hole with a lower modulus of elasticity than the shaft material, are measures to reduce K_σ. The most effective means is the application of relieving notches by pressing in a punch (K_σ = 1.0), followed by the pressing of the hole by balls (K_σ = 1.10). The authors present data

Card 1/2

Investigating the effect of stress ...

obtained during the testing of specimens with keyways of different shapes. The most expedient shape with a minimum value of $K_\sigma = 1.0$ proved to be keyways with rectangular or semicircular cross section having smooth junctions with the specimen surface. There are 6 figures and 2 references.

I. Bernshteyn

[Abstracter's note: Complete translation]

Card 2/2

MAK, S.L., kand.tekhn.nauk, dotsent; SHTEYNBERG, L.B., inzh.

Determining bending stresses in wires of a steel cable. Izv.vys.-ucheb.zav.; mashinostr. no.7:64-70 '61. (MIRA 14:9)

1. Odesskiy politekhnicheskiy institut.
(Cables)

MAK, S.L., kand.tekhn.nauk, dotsent; REUT, V.I., kand.tekhn.nauk, dotsent

Effect of deviations of proper centering of crane jib units on the tension of their elements. Izv.vys.ucheb.zav.; mashinostr. no.6:153-158 '62. (MIRA 15:11)

1. Odesskiy politekhnicheskiy institut (for Mak). 2. Odesskiy institut pishchevoy i kholodil'noy promyshlennosti (for Reut).
(Cranes, derricks, etc.—Testing)

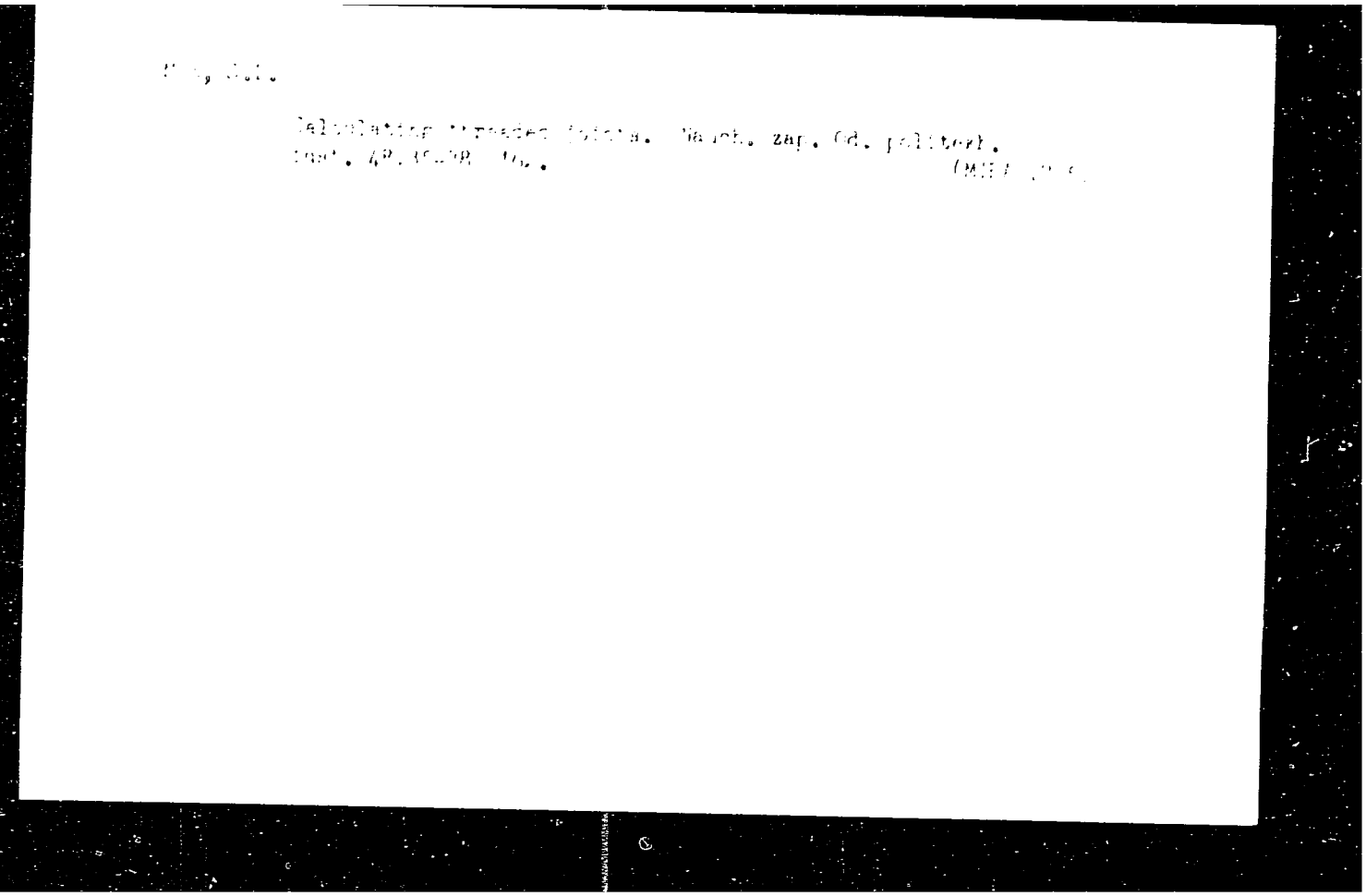
MAK, S.L.; TULENKOV, F.K.; SHTEYNBERG, L.B.; BERSHAK, V.I.; SERGEYEV, S. I.; GUDIMENKO, A.I.; DAVYDOV, A.M.

Exchange of experience. Zav.lab. 28 no.1:114-115 '62.
(MIRA 15:2)

1. Odesskiy politekhnicheskiy institut i Odesskiy zavod stal'nykh kanatov (for Mak, Tulenkov, Shteynberg). 2. Gosudarstvennyy nauchno-issledovatel'skiy institut tsvetnykh metallov (for Bershak, Gudimenko, Davydov).
(Testing machines)

DOBROVOL'SKIY, Viktor Afanas'yevich; ZABLONSKIY, Konstantin Ivanovich; MAK, Solomon L'vovich; RADCHIK, Aleksandr Semenovich; ERLIKH, Lazar' Borisovich; PYATNITSKIY, A.A., prof., retsenzent; ACHERKAN, N.S., doktor tekhn. nauk, prof., otv. red.; BYKOVSKIY, A.I., inzh., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Machine parts] Detali mashin. Izd. 6., dop. Moskav, Mashgiz, 1962. 601 p. (MIRA 16:5)
(Machinery)



ZABLONSKIY, K.I., kand. tekhn. nauk, dotsent; MAK, S.L., kand. tekhn. nauk, dotsent

Reducing the uneveness of pressure distribution on contacting surfaces. Izv. vys. ucheb. zav.; mashinostr. no.9: 120-126 '63. (MIRA 17:3)

1. Odesskiy politekhnicheskiy institut.

KICZKA, Witold; MAKA, Marian; DANECKA, Urszula

Effect of cortisone on the blood sugar level in patients with infectious hepatitis. Prezegl. epidem. 16 no.2:167-170 '62.

1. Z Kliniki Chorob Zakaznych AM w Bytomiu Kierownik: prof. dr K. Szymonski i z I Oddzialu Wewnetrznego Szpitala Miejskiego w Chorzowie Ordynator: dr M. Paprotna.

(HEPATITIS INFECTIOUS blood) (BLOOD SUGAR pharmacol)
(CORTISONE ther)

KICZKA, Witold; MAKA, Marian; DANICKA, Urszula

Effect of vitamin B12 and cortisone on the blood sugar level in patients with infectious hepatitis. Przegl. epidem. 16 no.2:171-175 '62.

1. Z Kliniki Chorob Zakaznych AM w Bytomiu Kierownik: prof. dr K. Szymonski i z Oddzialu Wewnetrznego Szpitala Miejskiego Nr 3 w Chorzowie Ordynator: dr med. M. Paprotna.

(HEPATITIS INFECTIOUS blood) (BLOOD SUGAR pharmacol)
(VITAMIN B12) (CORTISONE ther)

KACHLICKI, Zdzislaw; MAKA, Zbigniew

D.C. voltage transistor stabilizers. Elektryka Poznan no.4:39-60 '63.

MAKACHEV, N. I.

MAKACHEV, N. I. -- "Investigation of the Operating Mechanisms of Automatic Looms with an Effective Width of 1.. cm." Min Higher Education USSR, Moscow Textile Inst, Moscow, 1956. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No 44, October 1 56

MAKARCHEV, N.I., kand.tekhn.nauk

Modernization of the picking mechanisms of automatic looms. Tekst. prom. 20 no.8:30-37 Ag '60. (MIRA 13:9)
(Looms)

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AUTHOR: V. Makachin

TITLE: Latest Developments in Astronomy

PERIODICAL: K'o Hsüeh Hsin Wen, 1959, Nr 37, p 19 ✓

ABSTRACT: This is a translation of an article released by the Information Office of the Soviet Embassy.

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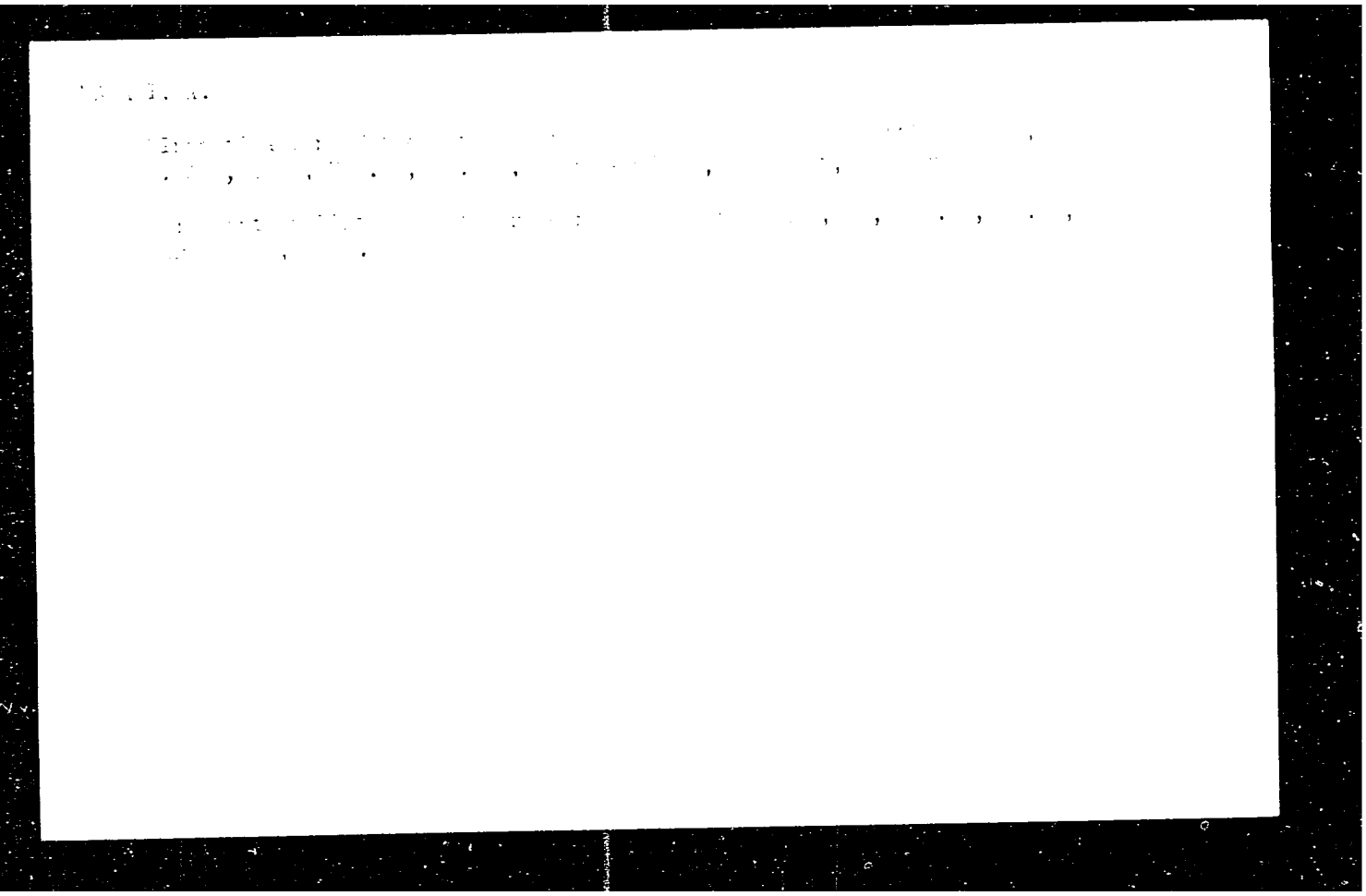

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[Growing hemp and processing retted hemp straw]Vyrashchivanie konopli i pererabotka tresty. Moskva, Izd-vo M-va sel'.khoz. RSFSR, 1962. 107 p. (MIRA 15:10)
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18(7) PHASE I BOOK EXPLOITATION SOV/3356

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-Resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev, Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. The methods employed in investigating specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

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